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A Quarterly Tabloid of the Faculty of Medicine at the University of Toronto

Spring 1985 Vol. I No. 2

tablet

RESEARCH IN MEDICINE

Within the Faculty of Medicine, Medical Research is a vital component. This issue of TABLET explores a variety of research issues and projects.

The Department of Immunology
A new department dedicated to research on the body's immune system.

Hospital Research Institutes
A frank discussion of the potential impact of these institutes on the University.

Research in the Pulmonary Surfactant Preparation
A successful research project offers an innovative solution to the prevention of Respiratory Distress Syndrome in Neonatal Infants

Using Computers in Research
A newly-developed computer course instructs graduate students in the fundamentals of using the technology in research

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dedication

After 39 years at the University of Toronto, Jane Musson, secretary to the Associate Dean-Community Health, is retiring.

Reflecting back over the years, Mrs. Musson cites the continual opportunity to learn and the infinite variety of projects in which she has been involved, as the aspects of her job she has enjoyed the most.

"I've always found my work and the people here interesting. And even after all this time, I'm never sure what to expect next."

Something of an institution within the Division of Community Health, Mrs. Musson says she answered a 1946 employment advertisement in the Globe and Mail and soon after found herself "chief cook and bottlewasher in the University's School of Hygiene."

Chuckling at the memory, she describes one early task which was to transcribe the History of Preventive Medicine onto stencils working from marginally legible handwritten notes; "I worked with a medical dictionary in hand and a magnifying glass at the other."

"I've always found my work and the people here interesting. And even after all this time, I never know what to expect next."

From general clerical work, Mrs. Musson quickly honed her skills and progressed to the position of Secretary to the Director of the School of Hygiene. She explains that because the School was a separate entity from the Faculty of Medicine, she had many personnel-related responsibilities which allowed her to get to know people on a first name basis. She adds that when the School joined the Faculty of Medicine in 1975, Mrs. Musson quickly adjusted to her new role.

Dr. John Hastings, who headed the Division for five years from 1975, believes, "She was the stabilizing force in the changeover and she deserves to be recognized for that."

He further describes her high degree of professionalism and dedication, both of which she combines with a very dry sense of humour.

He adds that she puts her remarkable sense of humour to excellent use each December when organizing the Faculty's Christmas Choir.

After her retirement on May 24, Mrs. Musson plans to start at one end of the library and read to the other and go on day trips around Ontario with friends.

At an early age, Mrs. Musson was told she would probably be "a lady of leisure" all her life because of health problems. Her indominable will has proven that prediction incorrect.

Mrs. Musson, who has been working at the University for 39 years.

Mrs. Jane Musson with Dr. Eugene Vayda, Associate Dean — Community Health

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from the dean

On Communications and Research

With this second issue of TABLET, our new faculty publication will become more familiar to the students, teachers, administrative staff and alumni who receive it. It is time now for you, our readers, to help us evaluate it and set its future course. After the first issue, the basic question arose: why does the Faculty need to do this?

I tried to address this question in the inaugural issue. Briefly, in this large, widely dispersed Health Science Complex communication becomes difficult. The many undergraduates, graduates, Faculty and administrative staff members in the many buildings and affiliated teaching hospitals often do not learn of developments they would find interesting, and sometimes they have difficulty in identifying with the Faculty of Medicine. Similarly, our many alumni do not receive enough information about their professional *alma mater* and do not feel as much a part of the Faculty family as they or we would wish. TABLET will attempt to address these problems four times each year.

What then, ought we to communicate? The format of these first two issues represents the ideas of a few of us in the Medical Sciences Building. However, no aspect of TABLET is sacrosanct and all is subject to change in order to meet the objectives stated above and the interests of the readers. Therefore, we are eager to hear from you, directly by letter or phone call and/or by your participation in the readership survey that we are conducting in this issue. Please tell us what you think, and help us mold TABLET so that it achieves its purposes.

To extend the range of information put into TABLET, we are establishing a broadly-based Advisory Board, which we hope will be in place before the next issue. This Board will represent all the constituencies that together form our U. of T. Faculty of Medicine "family", namely, the alumni associations, our staff (both academic and administrative) and our various student groups. We expect that the Advisory Board will ensure a balanced content for TABLET that will make available to all readers information about developments of significance to the future of the Faculty.

An example of developments that we consider very important, yet likely are not well understood by many of our readers, is the growth of semi-independent hospital-based research institutes in some of our major teaching hospitals. The advantages, hazards and implications of this development are explored in a feature article on research activities. It is based on interviews with two senior members of the Faculty, one a basic scientist who is also research director at the Hospital for Sick Children (Dr. A. Rothstein) and the other a basic scientist located in the MSB (Dr. D. Osmond). Although clinical research always has been conducted in all eleven fully-affiliated hospitals, and basic laboratory research has been supported openly by the four hospitals that have specific statutory research as well as clinical mandates (the Addiction Research Foundation, the Clarke Institute of Psychiatry, the Hospital for Sick Children, and the Ontario Cancer Institute at the Princess Margaret Hospital), something new has been added during the past few years. This is the commitment of the Boards of Trustees of some of our teaching general hospitals to extend the mandate of their institutions to the conduct of basic research. To meet this challenge they have undertaken to raise funds, construct research buildings and hire basic as well as clinical scientists.

Personally, I welcome this development and congratulate the medical staff, administration and trustees of those hospitals that have made the commitment. The present is a time of immense research opportunity due to the rapid growth of biomedical and psychosocial knowledge, the discovery of powerful new research techniques, and the sharp reduction in the lag time from discovery at the bench to application at the bedside. In Toronto, we now have the critical mass of trained, funded investigators, research and clinical facilities, and institutional support that should permit us to expand significantly our contributions to the current knowledge explosion. The resources that the Faculty itself can contribute to this enterprise are insufficient; we have neither the money nor the space needed to develop alone the facilities required to exploit fully the new opportunities. The teaching hospitals, together with the University, can recruit the appropriate new staff and put in place research programs that take advantage of the special opportunities for collaboration afforded by their own clinical programs and the availability of other research groups in our Health Science Complex. The consequences for enriching all our academic programs and the information transfer that will nourish the intellectual life of the Faculty as a whole are obvious.

These advantages notwithstanding, it is clearly important to take note of the concerns expressed regarding these developments. If the University and the hospital research institutes do not find ways of coordinating

their planning and of preventing duplication of effort and expense, it will be neither in the public interest nor in our own.

We are determined to find ways to ensure that this expensive development of hospital-based research institutes benefits our Health Sciences Complex as a whole and society at large. Yet this is an issue that touches many people and gives rise to contradictory views. It is our hope that readers of *TABLET*, all of whom have a right to an opinion on the matter, will contribute their ideas on the subject, something they can only do once they know about it.

We hope to hear from you, on this and other issues and on the form *TABLET* should take in the future.

Frederick H. Lowy
Dean

tablet

TABLET is published quarterly by the Faculty of Medicine, University of Toronto.
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Letters to the Editor

I have just received and read the first issue of TABLET and enjoyed its contents. For those of us that no longer have direct contact with the University of Toronto and the Faculty of Medicine, it is a most informative way to keep us apprised of developments.

I particularly enjoyed the article "First Women in Medicine." It's interesting to note that although we have made great progress in equality of education that women still give up their careers and their own personal objectives to take on a "new role of the homemaker." Of equal interest was the content of "Women in Medicine Support Group", with references to the multiple roles that women must juggle in order to meet career needs and those of the wife and mother. All of these issues are issues that are presently facing occupational therapy and physical therapy, as well as other female dominated health professions...

Sharon Brintnell
Chairman
Department of Occupational Therapy
University of Alberta
Edmonton

... let me compliment you on the first edition of TABLET. It certainly is a highly readable, informative publication and I think you and your colleagues deserve commendation for this significant achievement.

I must say the idea of a "tabloid" coming out of Toronto certainly has shaken the stereotype we have of your institution ...

I.M. McDonald,
Dean of Medicine
University of Saskatchewan

Many thanks for sending me the first "TABLET." I found it very interesting and informative, and I am happy to note that the first issue dealt with First Women in Medicine. I look forward very much to future issues.

Frank Iacobucci,
Vice-President and *Provost*
University of Toronto

My congratulations to you on the first issue of TABLET. I believe this journal will play a very useful role in keeping the Faculty informed.

Leslie Spence,
Professor and *Chairman*
Department of Microbiology

The Department of Immunology

With the establishment of the Faculty of Medicine's Department of Immunology on July 1st, 1984, came acknowledgement of the vital role that will be played by immunologists in the future.

That is not to suggest that the study of immunology, itself, is new to the Faculty. Quite the opposite: immunological research has been going on in Toronto for decades, though often under the auspices of genetic or microbiological study.

"Immunology is a very diffuse science that has applications in many areas," says Department Chairman, Dr. Richard Miller. "Immunology looks at the problem of how the body distinguishes self from non-self." To be more specific, it addresses how the body recognizes and defends itself against foreign invaders.

During the past 20 years, there has been a heightened sophistication of immunological research. Using as a basis work in suppressing antibody formation in such areas as tissue transplants, insulin resistance and allergies, immunologists are now also concerned with problems of the genetics of antibody response, with immunoglobin structure and with the regulation of antibody formation.

Dr. Miller says there is an ever-growing list of ailments which are actually defects of the immune system, such as juvenile diabetes, cancerous tumours and AIDS.

Dr. Miller believes that while the University of Toronto's department is one of the first in Canada, there is a trend towards setting up separate departments of immunology. He expects that other Canadian universities will soon follow U. of T.'s lead.

Dr. Bernhard Cinader

Department's Roots

Prior to the establishment of a University Department, the Institute of Immunology was formed in 1971, as a component of a network of Institutes and Centres which operate under the aegis of the School of Graduate Studies. Dr. Bernhard Cinader, founder and first director of the Institute, says that there was a need for communication between immunologists in Toronto. He felt that too often scientists were working in isolation, and that the Institute provided a forum in which ideas and information could be transmitted. He also hoped that, through the Institute, researchers would be encouraged to collaborate on multidisciplinary projects.

Until then, immunology was not recognized as a separate discipline here. A microbiologist might study immunity to infection, a surgeon immunity to organ transplants, an allergist immune reactions to pollens, and a geneticist autoimmunity. All four scientists operated in separate departments, yet they were bound by the study of a common biological system — which was the topic of immunology. It was Dr. Cinader's hope that, through the Institute, knowledge and experience would be shared.

Other Societies

Dr. Cinader's work in founding the Institute was not his first success in implementing a structural concept of immunological organization. He was responsible for the development of the Canadian Society for Immunology in 1966. Soon after, in 1968, he was instrumental in the creation of the International Union of Immunology. He was the first President of the Canadian Society and the International Union.

In Toronto, the Institute of Immunology offered graduate studies and provided a vehicle for communication among immunologists. Initially, the Institute functioned according to plan. However, because the Institute operated on a minimal budget and because immunology expanded rapidly, it became difficult to achieve its objectives without an adequate organizational centre of gravity. Clearly, a more powerful structure was necessary, particularly to advance more focused research and graduate studies. As a result, the recommendation of a Dean's Task Force to create a University Department was adopted.

The Department Today

Although the Department of Immunology is not yet fully staffed, it will be receiving substantial Faculty backing to establish a strong focus in the Medical Sciences Building. There are already a considerable number and range of immunological research projects underway. Dr. Miller says that several teaching hospitals, including the Wellesley, Mount Sinai, and Toronto Western Hospitals are creating new groups for research in immunology, in addition to the strong groups at the Ontario Cancer Institute and the Hospital for Sick Children.

Toronto's current projects are diverse and vary from Dr. Tak Mak's research in "T-Cell Antigen Receptors," to Dr. Alistair Cunningham's study on "The Effect of Mental State on Immunity."

Inaugural Symposium

To formally introduce the department to the Faculty, a day-long symposium was held on March 9th at Trinity College. Ten presentations covered a variety of topics ranging from a historical perspective of immunology by Dr. Robert Painter to "Studies on T-Cell Differentiation" by Dr. Miller to "Inherited Tolerance" by Dr. R.M. Gorczynski. Several prominent immunologists from across Canada attended the event.

Future Directions

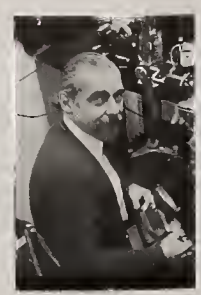
"We now are looking at two proposals which will significantly influence the department's direction," says Dr. Miller.

The first proposal is a joint venture in conjunction with the Department of Surgery to create a basic research unit in transplantation immunology as part of a new transplant centre. The centre will provide support for research into immune response against new organs and the frequent resultant rejection. Dr. Miller points out that the actual surgical procedure has become one of the easier aspects of a transplant, whereas organ rejection is not yet well controlled.

The second proposal is a project with the Rheumatic Disease Unit at Wellesley Hospital. Funding has been provided to set up a research project to study the autoimmunity of rheumatoid disease.

Conclusion

The study of the body's immune system is both fascinating and lifesaving. From immunization of children against previously fatal diseases to current research into mechanisms of aging and of antigens of cancerous tumours, the work of immunologists has already had an incredible impact on public health, basic biology, and biotechnology. The fledgling Department of Immunology was created in recognition of the far greater future importance of this discipline which will hold a position of high visibility within the Canadian medical community of tomorrow.



Dr. Richard Miller

... See facing page for more on the Department of Immunology ▸

Easton Donation

"Some of the projects I would consider might be desirable would be ... the foundation of a chair in some branch of medicine."

Excerpt from Mr. Easton's Will

A corollary to the creation of the Department of Immunology was a rather mysterious and very substantial donation made to the University in 1981.

At his death, at age 80, Mr. Charles Gould Easton, a retired executive, bequeathed the bulk of his estate — amounting to over $1 million — to the University. With the provision that the money be utilized by the Faculty of Medicine for research, Mr. Easton's will also expressed his desire that the Faculty use the capital to fund a worthy project, for instance, the foundation of a Chair in some branch of medicine.

However, Mr. Easton's will does not explain the motivation in leaving his estate to the University. Sources close to Mr. Easton, who at one time was President and Chairman of the Board of the Eagle Pencil Company, revealed that he had no living relatives and that he was in very poor health in the months proceeding his death. This, it is suggested, may have precipitated his decision to devote his estate to medical research.

Obviously, the Easton bequest will greatly facilitate the further development of the new Department of Immunology. The Faculty has obtained Governing Council approval in March to use the capital from the donation to establish an endowed Chair — the Charles Gould Easton Chair in Immunology. The Department Chairman, Dr. Richard Miller, will be known as the Easton Professor, during his term.

The Easton Professor, together with the Dean of Medicine, will bear responsibility for the administration and allocation of the remaining funds to the end of fostering excellence in the Department's academic and research-oriented goals.

The creation of this Chair underlines the high degree of continuing commitment on the part of the University to the advancement of immunological research.

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Hospital Research Institutes

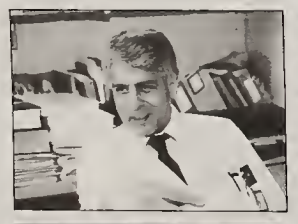
History and common experience indicate that research is the engine that advances medical knowledge as well as acting as a vehicle for enriching medical education and health care delivery.

Dialogue, in this issue of tablet, looks at the merits and disadvantages of the Research Institutes which have been created by several of the University's teaching hospitals. Toronto's research community is strongly divided in opinion on the potential impact of these institutes on the University's research departments. Of primary concern is the allocation of research grants between hospital-based and campus-based projects. As well, there is concern about the pool of graduate students and the quality of their training.

Sentiment runs high on this topic and two opposite points of view are presented. In the following articles, Dr. Dan Osmond, Professor in the Department of Physiology and Dr. Aser Rothstein, Professor in the Department of Medical Biophysics and Director of the Research Institute at the Hospital for Sick Children, present their views on the impact of the Hospital Research Institutes on the University. Their views are their own and do not necessarily reflect the Faculty's position on the issue.

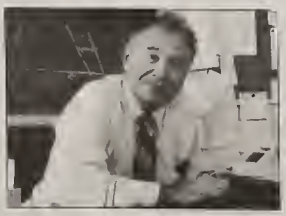
"I believe they have already introduced a serious morale problem which will grow as their full impact upon us becomes manifest."

Dr. Osmond



"To inhibit institutes in their development because they are going to be more competitive in research, I think is not an acceptable premise."

Dr. Rothstein



DISADVANTAGE

Dr. Osmond

"There is no shortage of vision, ambition and ideas within our Faculty, only of the wherewithal to give them substance, within the existing well-tried structures. With the introduction of hospital research institutes, what do we see? We see a mind-boggling feast and famine juxtaposition of proliferating multi-million dollar research institutes and nearby University Departments undergoing painful budgetary squeezes that threaten essential teaching functions, increase teaching, administrative and "crisis management" loads, and decrease the time available for research.

I am not the only one who questions the rationale, motive, economy, academic advisability and financial operational viability of such Institutes. I believe they have already introduced a serious morale problem which will grow as their full impact upon us becomes manifest.

The main faulty lines of argument advanced in favour of Institutes are that if some research is good for us, a lot more would be better. If hard times are curbing growth within the University sector, we should proliferate research in the Hospital sector because funds can be raised there. But do the hospitals really want and need them?

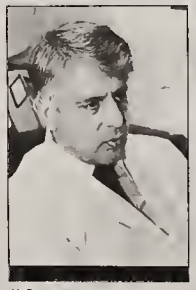
The sad fact is that while the hospitals can raise capital for buildings they are less able and/or willing to raise operating funds. They are already strapped for these and need no extra burdens to carry in the shape of Institutes!

In my judgment, the gravest objection to the Institutes arises from the blurring of their identity relative to the University. They will be external and autonomous when it comes to capital funding, governance policy, staffing, and day-to-day operation, but internal to the Faculty and University in many other respects. Like the proverbial camel with its nose in the nomad's tent, the Institutes will find themselves mostly outside when it suits them, but with the option to creep as far inside as their clout and well-timed political wriggles will carry them. In the end, of course, the tent takes on the shape of the camel.

Why do I say the Institutes are both out and in?

First, administrators of this Faculty and University are heavily involved in promoting and establishing these Institutes. Our "insiders" are working on behalf of these so-called outsiders during tough times that should fully occupy them on the inside.

Second, there are actual or potential resource implications to the University. I am not sufficiently well versed in the administrative ins and outs of it, but it seems clear that capital and other planning that takes closely allied Institutes into account will be different from planning that proceeds independently of them. For instance, there will not be as much zeal and energy left over for care or promotion of facilities, staff, and programs on the inside if these are heavily expended on the outside.



"the gravest objection arises from the blurring of their identity relative to the University."

Third, Institute researchers' productivity will depend on successful competition for scarce research funds from the same granting agencies that are already strapped enough to approve but not fund many highly qualified researchers within the Faculty. Even greater numbers of researchers will chase inadequate numbers of operational dollars adding to the wasteful frustration that already exists in abundant measure.

Fourth, Institute researchers will compete for graduate students from a position of probable advantage with respect to space, infrastructure, and stipends. The impressive growth of Institutes coincident with constraint in the University could create the impression among students that Institutes are where it's at, with adverse effects upon the University. The University Departments will expend their energies in nurturing students through the demanding undergraduate and early graduate years, only to have them snatched away in their prime. There could be a "brain drain" from University to Institute for the wrong reasons.

Fifth, the quality of graduate training could become even more difficult to maintain and monitor than it is now because students will be physically dispersed in diverse off-campus hospital environments. Such environments are fundamentally more suited and dedicated to the care of sick people than to the training of graduate students, especially the non-M.D.s who might feel second-class because they cannot follow their role models to the patient's bedside.

The Institutes may protest to the contrary but it is easier to talk of excellence than to provide the environment, role models, unhurried attention and sheer hard professorial work required to nurture our brightest students. Years of graduate student supervision and observation convince me both of the necessity and the fragility of an excellent training environment and of the probability that universities are better at it than hospitals.

What may be even more important is the fact that the best science demands intense single-minded dedication which is difficult to achieve when the supervisor's busy clinical and conference schedule constantly keeps him away from the laboratory bench. At the graduate level, association with the supervisor on a daily basis, on free and equal terms conducive to an easy exchange of scientific values, skills, and ideas is not only an important thing, but perhaps the ONLY important thing.

Sixth, the potential steerage capacity of Institutes and Hospitals upon the Faculty and University is truly immense. I am not talking of some minor perturbation but of the potential to change our essential character. We could become a "hospiversity," a sort of giant in our midst by passing entrepreneurs like a perenially hungry Cuckoo-chick for others to look after.

This Faculty's researchers are basically high-achieving types who, in most cases, are

already as stretched as they can be. They have competed successfully all their lives and continue to do so. Too much time is now wasted competing for research funds, and in tedious review activities. Too many people are highly approved but underfunded, or not funded at all, including some of our most promising clinically qualified researchers.

The problem is that there is not enough pie to compete for and excessive competition should not become a substitute for science! It can lower morale and otherwise militate against good, creative science. Creating an overcrowded, viciously competing scientific scene in Toronto that turns scientists on each other, and turns off students that come to us, will weaken rather than strengthen us.

I can sum up my views of University-related Hospital Research Institutes in the words of a cartoon. One scientist waves the magical potion he has prepared before the eyes of a curious colleague and says, 'It may well bring about immortality, but it will take forever to test it.' "

ADVANTAGE

Dr. Rothstein

"On the issue of funding, of course, hospitals compete to some degree with the University, but a lot of our money comes from agencies that people in basic science departments at the University are not likely to approach. We (hospital-based and campus-based) both compete at the Medical Research Council, but again, we get funding from 59 other agencies. The majority of agencies that fund the Hospital are more disease oriented, and I would hazard a guess that they are not funding many basic science projects.

The assumption is that competition for funds is a bad thing, but I think that if you look at the overall picture, the 'best' research is getting funded. To inhibit institutes in their development because they are going to be more competitive in research, I think is not an acceptable premise.

I think as the demands for research funds grow, that will put some pressure for more money on the funding system, but it will only cause temporary pain. If we think small, we will always be small.

It is like trying to tell Alberta, which is expanding rapidly now, that they can't expand because Toronto already has the money and we don't want to share, even though they may be putting up better competition for the funds. With the Heritage Foundation, they are able to bring some very good young people on stream, and after two years of funding they have to go out to the same feeding troughs as the rest of us. We can't tell them they can't develop because it might be hard on us.

There are a lot of reasons why research should go on in the hospitals. There are some kinds of research that can only go on in the hospitals, for example, research based on patients — research that in a sense uses the hospital for a laboratory. In a hospital, there are patients that one could look at as experiments that nature has created. We can gain a great deal of basic biological knowledge from these patients. It is a two way street in gaining information we can help in diagnosing and maybe in curing them. That kind of research can only be done in a hospital. I'd say a fairly large fraction of the research we do is built around particular populations of patients, which gives us a window on certain biological processes. That's reason enough to have research in the hospitals.

Another very important consideration is knowledge transfer. A recent MRC report says that much of the information which comes out of basic research labs — and which is potentially useful in treating patients — is not being used. There is a failure in our hospitals and medical schools in using what we know effectively. One reason for this gap is that there are two populations of people — clinician-scientists and basic scientists. In our medical school's structure these people are kept separated somewhat, and I think that is a grave deficiency. I think it is wrong to end up with biochemists only talking to biochemists.

In the hospitals, where you have a lot of basic research people working side by side, waiting for the same elevators, in the same coffee shops, with people who are faced with bedside problems, it is amazing how much conversation goes on that ends up in a very rapid knowledge transfer. It is not only what they are doing in their own labs, but it is the whole matrix of things that the basic scientist knows, from reading, from going to seminars, plus what he is actually doing in his lab. All of this is available for useful transfer to the clinical side. I can't think of any other way for this to happen than for these people to be in the same place, talking, collaborating and using each other's technologies.

From the scientific point of view, there is a lot of synergism in the mixing of people, that occurs in the hospital. I can think of all kinds of unusually scientific companionships that arise in a hospital allowing interactions between clinical and basic research.

Moreover, research activities enhance the quality of the clinical operation because we have a reservoir of expertise that can be brought to bear on a particular case that other hospitals don't have. When we go out to recruit, the leaders in any particular clinical specialty area are attracted here not only by the clinical operations but by the whole matrix of research connected to it. The quality of clinicians we can attract is very much enhanced by the fact that we have a very viable and active research department.

Another factor is a very pragmatic one: universities are in a real bind right now, in getting resources and bringing people on staff, particularly in our university, which is so heavily tenured. There may be no place for young people at the universities, but the hospitals can still mobilize resources and money from the public, so that they can keep young people in the research stream.

The hospitals are able to recruit a high quality of people because the hospital is an attractive research environment. Their function here is primarily research. We hire people because we think they will be imaginative and creative researchers. In the university, on the other hand, research is only one component and the other main function is teaching, so departments, when they hire, are obligated to make sure that they have teachers to cover everything and that they are good teachers, and they also want them to be good researchers. All of our people do some teaching but the teaching is not a big commitment. Our people literally sink or swim by their research.

"... the key issue is that the hospital research institutes are a potential boon to the University."

If a grad student likes what a researcher is doing he or she will try to work with him or her, whether it is here or at the University. But to some students, the idea of being in a hospital is an extra attraction. The wide array of activities that they can be exposed to in this one place is dramatic.

I think the key issue is that the hospital research institutes are a potential boon to the University because of the otherwise gloomy funding picture. If the University can take advantage of the situation, it offers a major opportunity for the enrichment of the overall program. What we need is a highly cooperative attitude between the University and its teaching hospitals."

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This successful research project offers an innovative solution to the prevention of Respiratory Distress Syndrome in Neonatal Infants.

RESEARCH IN MEDICINE

Last August, at Women's College Hospital, a clinical study of a new treatment for preterm infants suffering from respiratory difficulties was nearing its conclusion. Completion of the study confirmed that Respiratory Distress Syndrome (RDS), which kills approximately 2,000 Canadian newborns annually, can to some degree be prevented. Twenty years of medical research under Dr. Goran Enhorning, a Professor in the Department of Obstetrics and Gynaecology, had brought hopeful results.

Medical research aims to promote health and enhance the quality of life. The quest to explore and study, to learn and understand may ultimately pay off and help reduce human suffering. When, after years of diligent and dedicated research, a member of our Faculty contributes to medical progress, it offers an opportunity to reflect upon the fundamental concepts of medical research and the motivation of research scientists.

Discovery and positive results also produce excitement. When the results of medical research succeed in improving the quality of survival for newborn infants, the success is particularly gratifying.

This research project, under Dr. Enhorning, succeeded in alleviating breathing problems of newborn infants by supplementing the pulmonary surfactant — a component of airway fluid essential to the first breath after birth. Dr. Andrew Shennan, of the Department of Paediatrics and the Perinatal Unit at Women's College Hospital says, "The concept of administering surfactant directly into the airways prior to the first breath is one of the most exciting advances in the treatment of preterm babies since we started using ventilation in the '60's." Dr. Shennan, who has been at Women's College Hospital for almost 10 years, assisted Dr. Enhorning in setting up the perinatal study.

The work on the surfactant preparation is intriguing not only because of its importance to the survival of preterm infants, but because it is, in the words of Dr. Shennan, "A classical example of basic research, from the idea, to the biochemical testing, to the animal experiments, and eventually to the clinical human trials."

How It Started

Dr. Enhorning became interested in the pulmonary surfactant in the late 1950's. "It wasn't uncommon, at that time, for an infant who was born prematurely to develop breathing difficulty and die. As an obstetrician I felt an obligation to find out why this was so and what could be done about it."

His interest was enhanced by a paper, which appeared in 1959, by Dr. Mary Ellen Avery, who was later to become Chairman of Paediatrics at McGill University and Dr. Jerry Mead, a respiratory physiologist. These two researchers were the first to suggest that RDS, common in preterm infants, is caused by a deficiency of pulmonary surfactant.

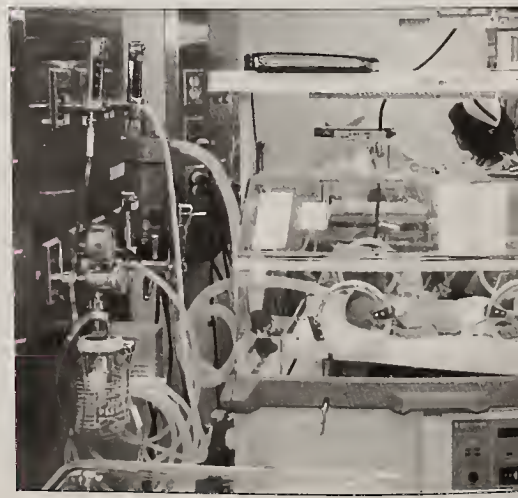
In mature fetal lungs, pulmonary surfactant is produced continuously. However, in the preterm fetus, production is low and does not become adequate until a few weeks prior to term. If a baby is born too early, (less than 35 weeks gestation), the supply of surfactant is often inadequate to support the first and subsequent breaths. The newborn infant's breathing will then be in jeopardy,the lungs possibly damaged, and RDS may develop.

Pulmonary surfactant is made up largely of phospholipid molecules, each with two fatty acids exposed to air and a polar head immersed in water. These molecules, which form a mono layer in a liquid surface, help reduce the lung's surface tension and facilitate the newborn's first breath. With continued breathing, the intermolecular distance changes. Expiration forces the molecules to become packed together so closely that surface tension is reduced to almost zero (at end expiration) and this stabilizes the alveoli, expanded lungs.

Dr. Enhorning says that several papers published following the pioneering work of Avery and Mead confirmed that premature infants who died of RDS had a surfactant deficiency and specifically lacked the most surface active phospholipid — dipalmitoyl phosphatidylcholine (DPPC), in comparison to infants of the same age who died for other reasons.

The Preliminary Work

Since it was apparent that premature



This "high-tech" nursery shows some of the highly sophisticated equipment available in the Neonatal Intensive Care Unit at Women's College Hospital

infants were suffering from a molecular deficiency, an obvious solution might be to devise some way of supplementing the surfactant, before RDS could develop.

In the mid-1960's, a group of physicians in Montreal reported on the treatment of RDS-affected infants with a spray of DPPC. This and a later trial with DPPC were equally unsuccessful in alleviating the condition.

"The surfactant should instantaneously reduce surface tension, thereby facilitating the first breath and providing stability to the lungs," states Dr. Enhorning. "Since RDS develops soon after the first difficult breath and with subsequent breathing, the surface activity should be exerted quickly to provide these two components."

Dr. Enhorning adds that it was later realized that DPPC alone took too long to produce the tension — reducing monolayer. This fact was overlooked because the methods for evaluating the physical properties of pulmonary surfactant were inappropriate. For this reason, Dr. Enhorning developed a technique which makes it possible to assess the surface properties of a monomolecular film outlining a bubble which is pulsating or "breathing" like an alveolus.

He says the method is fast, easy to use and requires a very small sample

"...surfactant should instantaneously reduce surface tension, thereby facilitating the first breath..."

volume. It demonstrated that natural surfactant, obtained from lung lavages of adult animals, formed a surface tension reducing the monomolecular layer almost immediately and at end "expiration", when the molecules were forced close together, surface tension approached zero.

The Biochemical Processes

Having a method to evaluate surfactant, the next step was to biochemically design a surfactant preparation. The effectiveness of natural surfactant compared to that of DPPC

in combination with other synthetic phospholipids was explored. Natural surfactant was found to be more effective. This initially led the researchers to work on the concept of using a preparation based on the natural product rather than an artificial surfactant.

In collaboration with Dr. Fred Possmayer, a biochemist at the University of Western Ontario, Dr. Enhorning's team developed a preparation obtained from the washings of the lungs of newly-slaughtered calves. The technique for evaluating the properties of surfactant proved crucial at this point.

Dr. Enhorning explains that attempts to sterilize the natural surfactant by autoclaving or radiation resulted in a loss of surface activity. This was probably due to the high protein content, he notes.

"We soon realized that if the proteins were not needed they should be removed since they might be allergens." He further explains that by extracting with chloroform methanol, most of the proteins were removed and the lipids, when resuspended, formed an active preparation which tolerated autoclaving.

The Animal Experiments

Following classical research models, the next step was to test the surfactant preparation in animal experiments. The group was quite hopeful that the preparation would prove effective, since it had been stringently tested during the developmental stage.

Tests conducted on rhesus monkeys, which were delivered prior to term, showed that the bovine surfactant, instilled in the trachea prior to the first breath, reduced the need for respiratory support and increased survival rates. The concept of supplying the surfactant *before* the first breath was vital, since some of the mechanical resistance to initial aeration was removed, the lungs were given stability immediately, and RDS was less likely to develop.

In 1980, Dr. Fujiwara, a Japanese paediatrician, tested a bovine surfactant in the treatment of 10 infants, extremely ill due to RDS.

"Their results were seemingly miraculous," says Dr. Enhorning, "but because they had not used a control group, did not convince everyone."

Stimulated by the Japanese study, Dr. Heather Bryan, a neonatologist at the Hospital for Sick Children, used the bovine surfactant on six infants with severe RDS. Four of them showed an immediate improvement of blood gases.

Setting Up the Trial

In 1983, encouraged by the promising results from the animal and pilot studies, Dr. Enhorning and Dr. Shennan, set up a clinical trial for surfactant treatment in preterm infants at Women's College Hospital.

The Women's College Hospital was chosen as a suitable site for the trial because it is a tertiary care centre with a large number of very preterm deliveries and because Women's College has, as Dr. Shennan calls it, "A very innovative approach to perinatal care."

"I was quite skeptical about the study at first," he says, "but past research seemed to suggest that the surfactant would not harm the infants, and also it would be a fairly simple matter for us to administer the surfactant as part of the existing routine for preterm infants."

Dr. Goran Enhorning
"It wasn't uncommon ... for an infant who was born prematurely to develop difficulty breathing and die. As an obstetrician I felt an obligation to find out why this was so and what could be done about it."

Dr. Andrew Shennan
"A classical example of basic research from the idea, to the biochemical testing, to the animal experiments and eventually to the clinical human testing."

In the course of the clinical trial, women at high risk of giving birth early, before 30 weeks, were identified and contacted. The parents of 72 infants agreed that their newborns could be subjects. Two main strata were identified: those delivering at less than 27 weeks and those delivering between 27 and 29 weeks. Following stratification, the infants were randomized to receive treatment or to serve as controls.

The surfactant was to be administered before the first breath. Dr. Shennan explains that the trial was set up so that immediately after the baby's birth, the chest was compressed, a catheter inserted into its trachea and the surfactant given. To avoid bias, the physician injecting surfactant, or air to the controls, was not further involved with the care of the infant for at least a week, and other members of the team did not know whether or not surfactant had been used.

"After the experiment was set up, we let things run their course, without interfering with or altering anything until the trial was over," adds Dr. Enhorning.

The Results

"The effect of the surfactant on the experimental group was amazing," says Dr. Shennan. "There was a dramatic improvement in lung function in the first 72 hours."

"Of the 39 babies who received surfactant, 21 were down to room air within 12 hours, whereas only nine of the 33 in the control group were off oxygen that quickly. The surfactant-treated needed half as much ventilation when compared to the control group who had a high requirement over the first 48 hours.

"The most surprising thing was that the number of babies who died was significantly lower. In the surfactant group only one died, a 580-gram baby, who had numerous other problems, and none of the group died from RDS. In the control group, six babies died of RDS."

He adds, "We could not detect any adverse effects of the treatment. If we add up all of the positive aspects of the reduced morbidity and decreased mortality, we would have to have a high incidence of adverse effects, either long- or short-term, to counteract for the positive effects."

The development of these children will be tracked for the first three years of life. Dr Shennan says that the surfactant-treated babies will be carefully monitored for allergic reactions to the bovine surfactant, as well as any psychological, subsequent respiratory or other difficulties.

The Next Step

Having conclusively determined that RDS can be prevented to some extent, the next step for Dr. Enhorning's research team will be to investigate what the optimal surfactant is and if it might be possible to achieve the same success with an artificial surfactant which is now being developed. An additional project will be to determine whether administration of surfactant can be delayed for a half hour or so, until it can be ascertained that an infant actually does have a surfactant deficiency. Since the surfactant is expensive and complicated to prepare, confirmation of a real need before administration would save effort and dollars.

It will take three to five years before the surfactant is available commercially. At present, the team hopes that the surfactant may be sponsored as an "Orphan Drug" and bypass some of the red tape involved in introducing new therapeutic agents in North America.

The editor of the journal **Paediatrics** has expressed interest in publishing a full report on the trial after hearing papers by Drs. Enhorning and Shennan in Washington last December.

Conclusion

Medical research aims to lessen suffering and enhance the quality of life. Yet, as we are all well aware, years of work often prove fruitless. Research scientists never have the assurance that their work will be recognized or that their funding will remain stable.

This research team succeeded after twenty years of continuous effort in developing a treatment which may help breathing in preterm infants. Such results make medical research worthwhile.

tablet tales

Architectural Drawing of Toronto General Hospital, 1913

Hospital & University: Forging the Link

On that cold winter morning, March 11, 1939, Toronto citizens awoke to find their morning newspapers bearing news of Hitler's growing involvement in Czechoslovakia and of Franco's advance on Madrid that would soon end the gruesome Spanish Civil War.

Meanwhile on that day, Toronto's "Who's Who" were preparing to attend the funeral of Sir Joseph Wesley Flavelle, President of National Trust, Chairman of the Bank of Commerce, Vice-President and principal owner of the Robert Simpson Company and President of the pork packing firm of William Davies Company; he was the keystone of Toronto's financial community.

A self-made millionaire, businessman and philanthropist, Flavelle was born in Peterborough in 1858. "Sir Joseph was always known as a hard worker. He took his first job when 13 years of age and progressed steadily to the front rank of financiers... Few indeed of the country's successful men had such wide interests outside. He was actively prominent in promoting hospital work, medical and general research and education," reported the Globe and Mail at the time. His obituaries further detailed his rise in the business and social world and of his long devotion to many institutions, including the University of Toronto and Toronto General Hospital. For it was Flavelle who, thirty years earlier, helped to mastermind the formal association between them.

It was not the first call for such an association. In the mid-1800's, Dr. Christopher Widmer, a prominent surgeon and Chairman of the Hospital Board, offered the upper floor of the hospital to the University's Medical Faculty. The Faculty would have exclusive use of the space and it would pay a monthly and per patient fee.

This first attempt at founding a University teaching hospital was turned down by the monetarily troubled Faculty since it believed it could not stand the financial strain of the conditions.

Improvements: Through New Facilities

In the early 20th Century, Toronto General Hospital was located at Gerrard and Sumach Streets. Built in 1854, it was obvious to the Hospital's authorities that the facilities were becoming obsolete, often preventing the staff physicians from properly treating their patients.

In 1904, while Chairman of the Board of Trustees at T.G.H. and a member of the Board of the University, Flavelle recognized that some doctors in the Medical Faculty hoped that a new hospital building could be built closer to the University, so that they could attend their clinics more easily.

For the next eight years, he campaigned and lobbied for financial donations for the new building. His efforts culminated in the opening of a new facility on College Street, in June, 1913.

Improvements: Through Association

At the same time that Flavelle was campaigning for a new hospital, Dr. William Osler, the Canadian destined to become one of the most influential physicians in medical history, was advocating the British practice of bedside teaching. Educated in Toronto and Montreal, Osler had been Professor of Medicine and Physician-in-Chief at Johns Hopkins University for over 15 years. While there, he advanced the idea of caring for the sick and at the same time investigating the problems of the disease. He felt students would receive better instruction as a result of this "laboratory" and "bedside teaching". Flavelle was no doubt aware of Osler's beliefs and successes at Johns Hopkins, and wanted to establish T.G.H. as the University's teaching hospital.

In 1905, Flavelle had an opportunity to advance his beliefs in associating the two institutions, when he was appointed to chair a Royal Commission charged with reorganizing and updating the University administration. A year later, the Commission's recommendations resulted in the passage of the University of Toronto Act by the Ontario Legislative Assembly . Among the terms of this Act, and because of a grant to the Toronto General Hospital, the University was given the right to use patients in the public wards for clinical instruction of medical students. Other conditions of this Act were unclear, and the Hospital trustees eagerly asserted their apparent right to make all appointments to the Hospital.

Through Flavelle's efforts a compromise was reached in 1908, giving each of the clinical heads in the Faculty a service in the Hospital. All other appointments were to be "made by the Board of Trustees of the Hospital on nomination by a joint committee of the Board of Governors of the University and the Board of Trustees of the Hospital."

Links Formalized

The University and the Hospital were formally linked in December of 1910, when Flavelle and Edmund Walker, Chairman of the University Board, signed an agreement which established the Joint Hospital Relations Committee. This committee — made up of four members each from the Hospital and University — set up a new service in surgery under Professor I.H. Cameron and designated that the University pay $25.00 per year per student.

However, a major controversy soon threatened to break up the association Flavelle had worked so hard to formulate. Between 1919 and 1921, there was considerable upheaval in a reorganization of the Faculty of Medicine stimulated by two large financial grants. The first, from Sir John and Lady Eaton established a full-time Chair of Medicine and the other, from the Rockefeller Foundation, resulted in the creation of a full-time Professor of Surgery and Surgeon-in-Chief to the Toronto General Hospital. The latter appointment set loose a storm of protest in the general medical community.

The position was given large powers, including the crucial authority to recommend to the University's Board of Governors, staff appointments and university appointments to the staffs of the hospitals that had a university affiliation. The resulting controversy erupted when older physicians lost their positions and hospital privileges.

A committee was established to examine the implications of the reorganization with the Ontario Premier E.C. Drury as chairman. Submissions were presented to the Committee, and included charges of autocracy and the creation of a "closed hospital". Flavelle testified before the Drury committee and later spoke at the Canadian Club in defence of the reorganization. Although the committee judged in favour of the dissatisfied physicians, the Drury Government was defeated at the polls before the recommendations could be implemented and its successor let the issue die.

Reorganization succeeded Dr. Duncan Graham and Dr. Clarence L. Starr had been appointed, in 1919 and 1921 respectively, to the Chairs of Medicine and Surgery. Despite the furour, they managed to unify the medical and surgical services and established the first residency and post-graduate programmes at the Hospital.

In 1921, recently honoured as Sir Joseph Wesley Flavelle, Baronet, he retired as Chairman of the Hospital Board, but remained on the Hospital and University Boards until his death. By the force of his energetic personality and his esteem in the business community, he was able to attract community leaders to serve the University and Hospital. Together Flavelle and his colleagues forged a lasting association between both institutions which is maintained to this day.

Before that March day, many of his colleagues had passed from the scene but those who had not gathered to honour Sir Joseph Flavelle as he was buried in Toronto's Mount Pleasant cemetery. His munificence continued beyond the grave. By the terms of his will he left substantial financial bequests to the University and the Hospital.

The University of Toronto Act of 1906 was replaced in 1971, but the terms of the Joint Relations Committee continue to be implemented with the University appointing representatives to the Toronto General's Board. All medical staff at the hospital must also qualify for University appointments and many hospital chiefs also hold University Chairs. The Committee clearly defines hospital and university responsibilities, describes teaching and research facilities, outlines staff appointments and delineates other matters relating to both institutions.

Sir Joseph Flavelle 1858-1939

As the father of the union between the two, Flavelle was a hard working pioneer with prophetic vision. This vision is reflected in his statement at the opening of the new hospital building in 1913.

"Close and intimate relationship between a Hospital and the Medical Faculty of a University of high standing is of great service, alike to the patients in the Hospital, the students in attendance, and the greater community outside who will later be served by (those) who graduate from the University. The relationship between the Toronto General Hospital and the University of Toronto is of this character, and is of equal value to both institutions."

Course Ushers Researchers into Computer Age

The creation of the micro-chip opened new realms of possibility in all sectors of society. We have excelled at using computer technology in everything from wristwatches to monitoring a cow's milk production to replacing the office typewriter. The computer has become an invaluable helpmate, as is readily apparent in medical research.

In fact, a recent survey of graduate

The Touch Screen makes applications programs like graphics easy to learn and use.

students in Physiology identified the need for a microcomputer course geared specifically to the requirements of biological researchers. In the past, attempts to introduce this type of course failed because there were not enough microcomputers available within the Faculty to service the anticipated demand.

Thanks to the timely donation of microcomputer equipment by Hewlett-Packard (Canada), however, and supplementary funds from the Faculty, we are now in a position to offer a new graduate course called, "Microcomputers for Research in Physiology and Medicine."

As a bonus, the Department of Computer Science in the Faculty of Arts and Science has recently offered to loan an additional Hewlett-Packard computer system for the course. This will help considerably in making the course accessible to more students.

The course has been designed to introduce students to the fundamental concepts of microcomputing and the potential use of computers in medical research. Students are not required to have any previous experience in computer programming.

"The goal of the course is to foster computer literacy," says Dr. John Stevens, one of the course instructors. "What we want is to teach students programming skills that can be applied practically, not to make them computer wizards."

Since the subject matter is complex, two half courses have been planned. The first course is directed by Professor Stevens, who is with the Department of Physiology and the Playfair Neuroscience Unit at the Toronto Western Hospital. Dr. Stevens is experienced in designing and building computer operating systems for biological applications, such as the reconstruction of neurons from electron micrographs, and modelling electrical properties of neurons.

Dr. Stevens has been working with computers for over 20 years, as he says, "Since they were just tubes." He has worked extensively with computers in biological research, and has written articles for the well-known American computer magazine, Byte.

Dr. Stevens' course is intended to introduce the non-programmer to biomedical computer applications and a sophisticated computer language called "C". Once students have mastered "C", special applications and the required elements of other languages will easily be acquired. Through this course students will be well equipped to apply microcomputers intelligently to their research problems, with an emphasis on basic concepts including graphics and modelling.

The second half-course, offered in the fall of 1985, will emphasize experimental applications. Designed to allow students engaged in life sciences to interface microcomputers with physiological and medical research situations, it will promote effective use of microcomputers for research projects and data handling. This second half-course will be given by several professors in the Department of Physiology and the Institute of Biomedical Engineering.

Students will be using the innovative HP-150 Touch Screen microcomputer as a terminal that interfaces with the main computer. The Touch Screen computer lets students implement commands by just touching the screen with their finger, rather than having to memorize complicated computer commands. With the interface to the main computer, the Touch Screen also allows students to work with more complex programming languages.

The Pain is Real

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The Faculty of Medicine had no badge until our new ties came. Clearly, symbols of Faculty affiliation were long overdue: the ties have been selling extremely well.

To the traditional tie, we would like to soon add new Faculty badges — silk scarves, pens, pad, key rings and pins. Each will be unique and beautifully designed in the best materials. And each will speak to the special kinship we feel for the Faculty — its people, traditions and eminence.

Ties, silk scarves and plaques are available now. Materials Distribution in the Medical Sciences Building has them. And you can still get Faculty ties there too.

Soon the new Faculty symbols will join the plaques, ties and bookends. And the Faculty frills we've so long lacked will be available in abundance for all.

Available through the Faculty of Medicine — Materials Distribution Centre

Well-Being in Ontario's Interns and Residents

It is 6:00 on a Friday afternoon. Janice, a 28 year old intern at one of Toronto's major hospitals, has been on call for almost 85 hours this week. Tonight, she is concerned with a patient whose condition is not improving regardless of what she tries.

Janice is also worried about her relationship with her husband, who grumbled something this morning about spending more time together. She agrees with him, but right now, sleep is the only off duty activity she can think of.

This situation is ficticious but it is representative of the type of pressure exerted on interns and residents. It is now being debated how stress is affecting this group and the quality of medical care they are providing.

A major research project is currently underway that will document the effects of stress on the lives of interns and residents enrolled in Ontario's five medical schools. Dr. Victor Marshall, of the Department of Behavioral Science in the Division of Community Health and Dr. Kirby Hsu, a psychiatrist at the Clarke Institute and in private practice, are taking a close look at the forces working to shape the lives of doctors. In addition the study team also includes ten researchers from the Faculty of Medicine and representatives of PAIRO, the Professional Association of Interns and Residents in Ontario.

> *"... they begin to sacrifice their own health in order to learn to devote their lives to the health of their patients."*

The group will be studying data compiled from questionnaires mailed to about 2,600 house staff across Ontario. As well, the researchers will conduct in-depth follow up interviews with a smaller subsample, to find out how these people cope with the "pressure-cookery" atmosphere of their learning environment. The interns and residents will be asked to describe their health, their career, satisfaction and performance, and the interaction between their careers and their family lives. In short, the study will be aimed at pinpointing the essential differences between those who actually thrive on high stress levels and those whose lives are impaired by stress.

Community is Concerned with Stress

Work-induced stress is an issue which has been a source of concern to those in the health-care professions for some time and physicians are very aware of it. In fact, this study was initiated by PAIRO's Committee on the Physician-at-Risk, which approached Dr. Marshall about three years ago and asked him to undertake this project.

PAIRO, itself, was formed in the 1960's in response to what interns and residents perceived as extremely poor working conditions and low pay.

Focus of the Study

What are the features of training that are particularly stressful? How does the organizational structure of the learning experience affect the levels of work-related stress? What personal support systems exist for interns and residents which help to mitigate the effects of stress? What personal factors may work to exacerbate it? These are some of the questions which the study will seek to answer.

Entitled "Work and Well-being in Interns and Residents in Ontario," the study will try to isolate the particularly stressful aspects of the internship and residency system, in the hope that it may suggest possible areas for improvement in the post-graduate education of physicians.

"There is an optimal level of stress, call it eustress/distress balance, which contributes in a positive way to a person's health and happiness," says Dr. Marshall. "I believe that in internship and residency, and in medical school, the balance is tipped heavily towards distress. I cannot believe that a person nearing the end of a 30-hour shift is learning anything, or that good health-care is being delivered under these conditions."

An earlier study of stress in Toronto's undergraduate medical students, "Task Force on Student Stress," discovered that by the time a student reaches fourth year, he or she is already under a considerable level of stress. For instance, students at that level are involved in their first experience with clinical responsibilities. They are frequently on-call, their performance is constantly being evaluated by supervisors, and certain aspects of their lives which took high priority in the past — such as exercise and fitness programs, balanced and regular diets, and forming and maintaining friendships outside of their careers — are now falling by the wayside. In a sense, they are caught in a conflict where they begin to sacrifice their own health in order to learn to devote their lives to the health of their patients.

Stable Relationships are Crucial

The issue of stable friendships and family relationships is a crucial one at times of stress, for it is here that an intern or resident will find whatever personal support is necessary to weather the storm. Says Dr. Marshall, "We suspect that many features of post-graduate medical education are isolating, acting to privatize the individual. People inside medicine find it increasingly difficult to maintain friendships with people outside medicine. The world of medicine becomes continually more engrossing, overwhelming if you will, so that people have more difficulty getting social support from the outside."

The extent to which immediate family members are on the "inside" or the "outside" will obviously affect family relationships. Marriage breakdown is considered to be one of the main indicators of high work stress, along with poor physical and psychological health, poor work performance, alcohol and drug dependency, depression and suicide.

This study is not just interested in the troubled physician. It will also try to document the range of mental health from robust well-being to severe ill health and further, what features of the work environment contribute most significantly to the physician's perception of well-being. Most of the data available to date are based on clinical studies of small groups of severely troubled doctors.

"To my knowledge, we are going to have the only study which will allow broad-based comparisons across all specialties and among interns and residents in five different medical schools," says Dr. Marshall. "There is no other study with as large a sample size which allows for simultaneous control of several variables. We have the potential here to set the standard for future studies for many years to come."

With the enthusiastic support of the Ontario Ministry of Health, and Health and Welfare Canada (through Dr. Marshall's National Health Scientist Award), the investigators have good reason to be confident of the ultimate success of their project. It would seem that the medical profession has everything to gain.

Dr. Victor Marshall

LOU GEHRIG,
Baseball Player
Born 1903,
Died of ALS 1941

DAVID NIVEN,
Actor, Author,
Born 1910,
Died of ALS 1983

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(Lou Gehrig's Disease)

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National Institute of Nutrition

"The Scarsdale diet," "Sugar-induced hyperactivity," "Retardation due to red food colouring," "High fibre diets reduce colon cancer," all of these have appeared in headlines in Canadian pap-ers over the last ten years. Nutrition and diet have become increasingly important to the health conscious and as a reflection of this attitude, the National Institute of Nutrition was recently inaugurated.

"The media needs to have a credible source of information about nutrition," says Dr. Harvey Anderson, Chairman of the University of Toronto Department of Nutritional Sciences and Associate Dean of Research, who is also Chairman of the Board of the new National Institute. "The Institute will allow journalists, no matter where they are in Canada, access to a central resource to verify their facts."

Dr. Anderson says that in the past the media have sometimes perpetrated misinformation, simply because the writer could not find a reliable place to check his or her facts. He adds that inaccurate information is also passed on through diet books and other nutrition-oriented articles seeming to offer miracle cures, which were not written by qualified experts.

The international award recently won by former Toronto Star Food Columnist, Jim White attests to the usefulness of this idea. The article which won the award was written in conjunction with Dr. David Jenkins of the Department of Nutritional Sciences.

Dr. Anderson further points out that nutrition is often depicted as the "Magic buffet for all types of disorders, and this simply is not true. For the benefit of the public we must work with the media to keep this in perspective."

Institute's Goals

While the Institute is interested in promoting accurate information to the public, it has other important goals. These are to provide health professionals with the tools, first, to communicate clear interpretations of current scientific knowledge; second, to promote good nutrition as a preventive measure against disease; and third, to encourage the teaching of nutrition courses in formal curricula.

It is also hoped that the Institute will be in a position to create a more positive environment for researchers wishing to investigate nutrition-based health problems. Dr. Anderson says that financial support for research in the area of nutrition has been disproportionately low compared to the role that food and nutrition play in prevention and treatment of chronic diseases. He points to the absence of peer review committees with the specific mandate of judging nutrition research in the major, national, funding agencies, with the exception of a committee which he will chair this spring established by the National Health Research and Development Program of Health and Welfare Canada.

The Institute of Nutrition will implement its goals through a Nutrition Information Centre, nutrition-related workshops and sponsorship of conferences and symposiums.

Joint Venture with Business

The concept of an Institute of Nutrition was originally raised in discussion between Dr. Anderson and Thomas Smyth, President and Chief Executive Officer of H.J. Heinz of Canada. He and Mr. Smyth then approached Keith Murray, Executive Director of the Human Nutrition Research Council, who helped to form a steering committee to develop and research the idea more fully.

The Institute was established formally in December of 1983. In the time since its creation, a Science Advisory Council has been formed of 12 prominent experts in the field of nutrition. These people, who are representative of the various parties involved in the Institute, have identified several priorities for attention by the Institute. These include problems such as hypertension, geriatric nutrition, cancer, weight imbalance, nutrition training of physicians, and fetal and maternal nutrition.

The overall mission of the Institute is to help develop and apply the science of nutrition for the betterment of Canadians. Through the co-operative efforts of public and private sector, this mission will be achieved.

University of Toronto Faculty of Medicine

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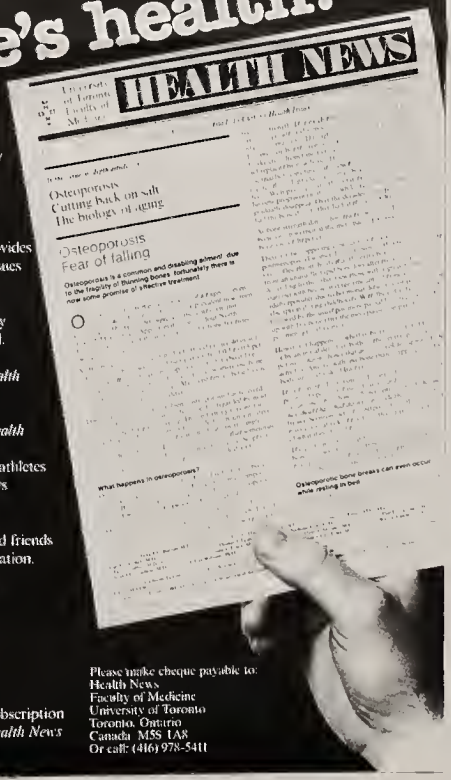
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Dr. George E. Connell

Tableau takes pleasure in featuring one of the Faculty of Medicine's most illustrious alumni, University President, Dr. George Edward Connell.

Dr. Connell, 54, returns to the University of Toronto, as its 12th President, from the University of Western Ontario, where he held the Presidency for seven years.

Associates of Dr. Connell, who chaired the Faculty's Department of Biochemistry from 1965 to 1970, consider him an admirable choice of leader. With his captivating manner and boyish enthusiasm, colleagues describe Connell as having an unassailable sense of honour and fairness, a flair for administration and a special adroitness in fostering relationships and delegating authority.

Sheila Connell, the President's warm and charming wife — herself a graduate of the University of Toronto's Trinity College and a former tutor in Social Sciences at York University — thinks her husband's greatest strength is probably, "his impeccable honesty and his tolerance towards others. He is a very accepting person who never bears grudges, not even against someone with whom he may just have been locked in mortal combat over some issue."

A former colleague and biochemist in the Faculty remarks, "George is very articulate with an enviable memory and incredible powers of persuasion that can convert others to his viewpoint. His sense of humour and his calm temperament enhance his leadership qualities, enabling him to stand back, reflect and make wise decisions."

Attributes for Presidency

Asked what he considers the attributes that qualify him for the Presidency, Dr. Connell replies, "If I have any special talents that make me competent to guide the affairs of this University, they probably depend on my aptitude for policy development and planning. That's what I am best at — working closely with a small group of senior colleagues. I put a lot of emphasis on relationships and probably rely more heavily than my predecessors on the Vice-Presidents of the University, currently three (soon to be four, I hope) to whom I give full authority for their areas of responsibility. But of course, like anyone else entrusted with such a role, I have inner doubts about succeeding in a task as challenging as this."

Voicing concern about one of the toughest challenges facing him, the new president says he hopes to find ways to safeguard the needs of the undergraduate students, so that they may benefit to the fullest from their years at University. He feels that these students may be the most vulnerable group in the University community since they are the most likely to be affected by budget cuts.

Connell emphasizes his dedication to excellence and maintaining the quality and standards of the University despite the erosion of resources in recent years. He sees the role of University President as "fundamentally one of academic leadership providing a strong sense of the institution and the direction it should take, ensuring that the administrators strive for that goal without drifting in response to momentary pressures."

"My underlying aim is to repay the University that shaped my destiny..."

Nourish the Unfashionable

As stated in his inaugural address, Connell believes universities are creative because they nourish the unfashionable and that established courses should not be abandoned in favour of trendy pursuits. And when we do find the ultimate technology — whether the microchip or something newer — it is vital to have something worthwhile to communicate.

"My underlying aim," says Dr. Connell, "is to repay the University that shaped my destiny, gave me academic insights and helped me forge relationships. By giving it the kind of leadership it deserves, I hope to express my gratitude to the University of Toronto."

Not someone to stand on needless ceremony or place himself on a pedestal, Connell is an approachable man who takes a lively interest in all aspects of University life. Nonetheless, beneath his gentle demeanour and kindly brown eyes lies a hint of steel that reveals the President's tenacity and dogged determination in carrying through goals or projects.

"He's a fighter," comments one associate. To prove the point, note Dr. Connell's response to the vitriolic letter of Professor Jean Smith (political economist and former Chairman, Academic Affairs Committee) in the *Bulletin* of June 25/84, decrying his appointment. "I am grateful to Jean Smith," declares Dr. Connell, "His forecast is so bleak, his expectations so low that I can hardly fail to beat them."

A popular anecdote that demonstrates his resolute perseverance in facing adversity took place at a meeting of the Council of Ontario Universities in the early 1980's. Having argued forcefully on a point opposed by everyone present, Connell reacted to a vote of 30 to one with the remark, "Well, I guess that's a deadlock."

Strong Background in Science

A solid scientific background helps Connell approach matters rationally and gives him insight into the University's research efforts. In the words of a former colleague, "George is no slouch as a scientist but a highly competent biochemist with a fine mind."

Dr. Connell took his Ph.D. under Charles S. Hanes, known for his work on enzymes, first at Cambridge University and from 1951 onward at the University of Toronto. George Connell and Gordon Dixon (now Chairman of Biochemistry at the University of Calgary) were Hanes' first graduate students in Toronto and Hanes recalls with gratitude the solid help they gave him, under somewhat difficult conditions, in planning and establishing the new research group. Connell spent four years on the study of two enzymes involved in gamma-glutamyl transfer reactions; he was the original discoverer of one of these enzymes. The role of gamma glutamyl enzymes in the body remains a subject of considerable interest today.

Charles Hanes has the highest regard for George Connell as a versatile and able scientist and he recalls that "even as a beginner in research George showed unusual judgement in developing his work. His objectives were clearly defined and his experiments were meticulously planned and executed. Ever receptive to new ideas, he would always consider them carefully before accepting them."

He was — and still is — quite obviously a scientist of the highest calibre.

While still graduate students, Drs. Connell and Dixon collaborated with Oliver Smithies, then at the Connaught Laboratories and now at the University of Wisconsin, on an important pioneering research project in the structure of haptoglobins. Employing starch-gel electrophoresis, which was invented by Smithies, they were able to separate the individual peptide chains of these plasma proteins.

Hanes points out, "George continued to make impressive contributions in various fields of biochemistry in the course of his all too short career as an active scientist. He was — and still is — quite obviously a scientist of the highest calibre.

In 1965, Connell succeeded Hanes as Chairman of the Biochemistry Department. After his five year chairmanship, Dr. Connell spent a sabbatical year working in Oxford with Rodney Porter, a Nobel Laureate, honoured for his studies on immunoglobulin structure. It was during his stay in Oxford that Dr. Connell was asked — by Dean A.L. Chute — to become Associate Dean, Basic Sciences at the Faculty of Medicine upon his return to Canada. Dr. Connell's initial response was "no"; he was too engrossed in his research on antibodies.

Versatility the Key

Later, he changed his mind. Even early in his career, Dr. Connell's interests had stretched beyond biochemistry to the basic sciences as a whole. Colleagues relate that he had an unusual dexterity in doing several things simultaneously — such as supervising a lab, formulating departmental policy, maintaining social contacts and enjoying the great outdoors.

Asked why he decided to pursue an administrative rather than a research and teaching route, Dr. Connell replies, "Well, the Associate Deanship was a vacant job that needed filling and seemed worth doing. Also, I felt that after being departmental chairman, returning to a professorship might be rather limiting, a single track road. So I accepted the Associate Deanship, but kept my lab in full operation."

In 1974, Dr. Connell became Vice-President (Research and Planning) and three years later was installed as President and Vice-Chancellor of the University of Western Ontario.

Still keenly aware of medical research issues, Dr. Connell is deeply concerned about the furor over animal experimentation. "I'm willing to take a personal part," he states, "to let the public know my own concerns and express the view that University research is fundamental to medical progress and often necessitates animal experiments." He deplores the criminal acts involved and the threats to University staff and hopes that law enforcement officers will take all possible steps to protect them.

Wide Variety of Talents and Interests

Dr. Connell is an all-round, Rennaissance person with wide-ranging interests other than science. He's an avid theatre-goer, a music lover (with a penchant for Baroque chamber music) and he used to play the violin. He and former co-researcher, Oliver Smithies — a flutist — frequently played together in a piano quartet. Dr. Connell still occasionally plays the piano.

During his Presidency at Western, he was approached

tableau

tablet talk

about sponsoring a student production of Gilbert and Sullivan's operetta, *Patience*. "That sounds dull," he responded, "I'd rather be in it." He was given the role of solicitor to the comic hero, Bunthorpe. The story goes that when invited, shortly afterwards, to attend a reception at the Lieutenant Governor's residence, he declined, telling Pauline McGibbon that he had to rehearse.

Although his time on stage totalled no more than two minutes, Dr. Connell recalls that the experience was "tremendously valuable, on two counts. First, it made me appreciate the rigors of stagecraft. I could manage to sing or to dance, but found it incredibly hard to do both at once. Second, it was one of those rare occasions in which the inevitable gap between President and students was bridged. The cast soon forgot my position and simply accepted me as one of the group."

Besides his theatrical exploits, Dr. Connell is an ardent athlete. The ability to relax and enjoy sports may well be a help in tackling arduous official duties. Not only does the University President run a daily seven minute mile, he also plays tennis, is a "mad keen" downhill skier and goes canoeing in the Northwest Territories.

Sheila Connell, raised in a University-oriented family (her father was a classics professor), is pondering the role of an Administrator's spouse in this age of feminism. She will likely come up with some refreshing ideas. A friendly, down-to-earth person with a strong social conscience, Mrs. Connell actively supports her husband in his difficult task as leader of a vast university — one that has had a profound influence on both their lives.

Appointments

■ **Dr. Malcolm Silver** has been appointed Chairman of the Department of Pathology. He succeeds Dr. Emmanual Farber who has chaired the Department since 1974. Dr. Silver is an eminent cardiac pathologist who returns to Toronto after five years as Chairman of the Department of Pathology at the University of Western Ontario.

■ **Dr. Steven Strasberg** has been appointed Head of the Division of General Surgery at Mount Sinai Hospital.

■ **Dr. Martin Buckspan** has been appointed Acting Head of the Division of Urology at Mount Sinai Hospital.

■ The new Mount Sinai Research Centre, directed by Dr. Louis Siminovitch, has appointed three researchers to senior positions in the Centre. They are **Dr. Bob Kerbel**, who comes to Toronto from Queen's University where he has been the head of a National Cancer Institute Croup, **Dr. Alan Bernstein**, who is currently at the Princess Margaret Hospital and will work in the field of molecular and developmental biology, and **Dr. John Roder**, formerly of the departments of immunology and microbiology at Queen's.

■ **Dr. J.W. Knox Ritchie** has been appointed as Head of Obstetrical Perinatology at the Mount Sinai Hospital, where he will direct the activities of the new thirty-bed high-risk obstetrical unit.

■ **Dr. Woody Fisher** has been appointed Vice-President, Research at Sunnybrook Medical Centre. He also will serve as Chairman of the Hospital's Research Committee.

■ **Mr. James Tory** is the new chairman of the Board of Trustees at the Hospital for Sick Children. He succeeds **Mr. Duncan Gordon**, who served as Chairman of the Board at Sick Kids for 14 years.

■ A Senior Vice-President has been appointed at the Toronto Western Hospital. He is **Mr. Mark Taylor**, who is well known to many members of the Health Science Complex as a former consultant with Woods Gordon.

■ **Mr. Cameron Voelker** has been appointed Director of the Health Care Research Unit effective April 1st, succeeding **Dr. Jack Williams**, who has moved to McGill University. Currently the Vice-President of Research for the Canadian Hospital Association, Mr. Voelker was previously an Assistant Professor in the Department of Preventive Medicine at Dalhousie University. His primary interests are in management information systems and program evaluation.

■ **Dr. Rory Fisher** is the new President of the Canadian Society of Geriatric Medicine. Dr. Fisher is also coordinator of Geriatrics in the Department of Medicine and head of the Department of Extended Care at Sunnybrook Medical Centre.

■ **Dr. R. Creighton** has been appointed Chief of Anaesthesia at the Hospital of Sick Children.

■ The Chief of Otolaryngology at the Hospital for Sick Children is **Dr. W. Crysdale**.

■ **Sister Mary Zimmerman**, Chief Executive Officer at St. Michael's Hospital for 22 years has retired. A testimonial dinner in her honor was held at the Metro Convention Centre in February. Close to 750 people including Ontario's Lieutenant Governor John Black Aird and Toronto's Mayor Art Eggelton attended the dinner. Sister Mary is succeeded at St. Michael's by **Sister Christine Gaudet**, who comes to Toronto from St. Joseph's General Hospital in Comox, B.C., where she has been the hospital administrator for twelve years.

New Developments

In an effort to recognize excellence in teaching, the Faculty has established **Undergraduate Medical Training Awards**. Up to two awards will be given in each of the following areas: Individual Teaching Effectiveness, Course Organization, Effective Use of Instructional Media. The Awards will consist of individual certificates, medals and original Canadian Native art. It is anticipated they will be presented at the Faculty Council Meeting in September of each year. The Teaching Awards Committee chaired by **Dr. Ross Fleming** will be soliciting nominations shortly.

The first joint meeting of the American Association of Anatomists (AAA), the Canadian Association of Anatomists (CAA), the Association of Anatomy Chairmen (AAC) and the Association Canadienne des Anatomistes (ACA) will be held at the Sheraton Centre on May 5-9. The Chairman of the Local Committee is **Dr. Keith L. Moore**, Professor and Chairman of Anatomy and Associate Dean, Basic Sciences in the Faculty of Medicine. The logo for this meeting was designed by **Professor Margo MacKay** of the Department of Art as Applied to Medicine.

Talk

The director of the acute geriatric unit at Toronto Western Hospital, **Dr. Barry Goldlist**, has been named as a co-recipient of the Nicholas M. and Hedy J. Munk Geriatric Award. The award is offered biennially to a physician of less than 40 years of age who has demonstrated special merit or whose achievements indicate future success in the field. Dr. Goldlist will use the award to observe the geriatric service at the Hammersmith Hospital in London, England.

The *Executive Development Project*, being run through the Department of Health Administration, has completed its first training program for medical directors of provincial psychiatric hospitals and chiefs of psychiatry in acute general hospitals. The project, under the direction of **Dr. Peggy Leatt** and **Dr. Ted Myers**, has been very well received. Plans now are being formulated to provide programs for community-based physicians including medical officers of health and physicians working in community health centres and occupational health programs. The long-range plan is to extend this project to departmental chiefs in acute general and specialized hospitals.

The *8th International Congress of Neurological Surgery* will be held in Toronto in July of this year. Congress President is **Dr. A.R. Hudson**, Chairman of the Division of Neurosurgery in the Department of Surgery and Chief of Neurosurgery at St. Michael's Hospital. Madame Jeanne Sauve will address the congress at the opening ceremonies, at which time presentations will be made of medals of honor to four senior neurosurgeons from around the world.

Blindness.

It all depends on how you look at it.

The Canadian National Institute for the Blind

Three members of this year's *PAIRO (Professional Association of Interns and Residents of Ontario)* executive are from the University of Toronto. **Dr. Mitchell Levine** is PAIRD vice-president; **Dr. Chris Gallant**, a second-year dermatology resident, is a member-at-large; and **Dr. Cerry Craigen**, a first year psychiatry resident, also is a member-at-large.

The second annual *PAIRO Conference Day* will be held at the Metro Toronto Convention Centre on April 27th. Dr. David Suzuki will be the keynote speaker. Other sessions will locus on legal medicine and financial and time management. **Dr. Chris Gallant** is the conference coordinator.

Dr. Denis Albe-Fessard of the Universite Pierre et Marie Curie in Paris, will deliver the ninth lecture in the Rosenstadt Lecture Series on Tuesday April 16, 1985. Her topic will be "Nociception and Deallcrentation Pain." Her host will be the Department of Surgery.

The Faculty of Medicine Research Office, in conjunction with the **Ontaro Science Centre**, has organized a series of Saturday lectures to mark the summer 1985 opening of the Centre's new Hall of Technology. The lectures will be held at 2:00 p.m., either in Theatre B or the auditorium. They are recommended for ages 12 to 100.

APRIL 13

Michael Baker, Professor of Medicine, Director, Division of Haematology, Department of Medicine, and Director Dncology Program, Toronto General Hospital. "Understanding Cancer: Impact of New Technology."

APRIL 20

Sharon Abel, Associate Professor of Otolaryngology, Principal Investigator, Silverman Hearing Research Laboratory, Mount Sinai Hospital, and **Hans Kunov**, Associate Professor of Otolaryngology, Institute of Biomedical Engineering. "Deafness: A Bionic Solution."

The Symposium *Murmurs of the Heart: Issues for Women in Medical Training* was held on February 8th and 9th at the Medical Sciences Building. Two hundred and fifty medical students, postgraduate trainees, physicians and other health care professionals participated in the event, which featured a keynote address by Doris Anderson and a series of workshops. The symposium was organized by a group of undergraduate medical students, consisting of **Pamela Stewart, Chantal Perrot, Kathy Ciles, Hilary Jaeger, Norma Baker, Susan Maenpaa, Mary Machamer, Nancy Trimble, Pat Neelands** and **Mark Azzopardi**. Proceedings of the symposium are available for $2.00 from the Support Group for Women in Medicine, c/o Dean's Dffice, Faculty of Medicine, University of Toronto.

Bits

With the coming of Spring comes the sobering thought of exams. The LMCC exams for final year medical students will be held on May 7 and 8. In preparation, the Class of 8T5 has put together the 1985 version of the annual **Bruce Tovee LMCC Review Lectures**. The lectures will be held in the Medical Sciences Auditorium. There will be priority seating for 4th, 3rd and 2nd year U. of T. students, as well as some reserved seats for physicians in the community who will be required to pay a nominal fee to attend the lectures as a refresher course. All others will be seated on a first come, first serve basis. There will be lecture notes on sale for $25 to non-U. of T. students.

On Saturday April 13, students from the Class of 8T8 will be opening the doors of Med Sci to the public for **Open House 1985**. This annual exposition has become a very popular attraction so put the date on your calendar now.

The Medical Society is the voice of undergraduate medical students at the University of Toronto. If you are interested in any of our endeavours or want some information please feel free to call our office at 978-8730, Monday, Wednesday, and Thursday during business hours.

A Lounge in Search of a Name

Dn January 28th, Dr. Brian Barber of the Department of Medical Genetics, cut the ribbon signifying the opening of the Third Floor Staff Lounge (Room 3388A). The lounge was developed to afford staff the opportunity to get to know each other better. Coffee is provided in the lounge at 10:00 a.m., 12:00 noon, and 3:00 p.m. on the honour system.

The lounge needs two things: a name and funds. "Club Med" has been suggested. Any other suggestions? Funds are required to complete the furnishings and to provide chairs for the balcony in the Spring. Cheques should be made out to "Faculty of Medicine — Staff Lounge," and sent to Dr. Keith Moore, Associate Dean — Basic Sciences.

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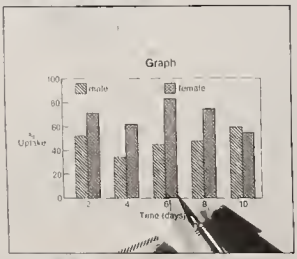

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